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REFERENCE



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# SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

# SOIL CONSERVATION

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WELLINGTON BRINK EDITOR

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SOIL CONSERVATION is issued monthly by SOIL CONSERVATION SERVICE of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with the approval of the Director of the Budget. SOIL CONSERVATION seeks to supply to workers of the Department of Agriculture engaged in soil conservation activities, information of special help to them in the performance of their duties. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., 10 cents a copy, or by subscription at the rate of \$1.00 per year, domestic; \$1.50 per year, foreign. Postage stamps will not be accepted in payment.

By THE HONORABLE MARVIN JONES

War Food Administrator

One of the greatest contributions that this Nation has been able to make to our fighting Allies has been food. Without the food that we were able to furnish, gallant old England might not have survived during the dark days when she stood practically alone between civilization and organized destruction.

A short while ago a Russian general who fought in the Battle of Stalingrad told me that but for the food and supplies America made available for the heroic Red Army, the advance could not have been carried out as it was.

Without our rich soils that food could not have been produced.

The capital stock of a nation is its soil resource. No business can stand a continuing drain on its capital; likewise no nation can endure long excessive drains on its capital resources.

We were able to furnish this food because we had a vast, new country, rich in natural wealth.

What are soil resources? They are food and clothing locked up in nature's warehouse against the time when man, through his efforts, takes them out. Our great soil resources in this country have enabled us to develop a great race of people. History shows that the character and strength of a nation goes up and down with its soil.

In our fast development of this new country we have not always been careful in the preservation of our soil, and much of this valuable Godgiven birthright has been permitted to wash or blow away. We have cut down our timber on the watersheds and hillsides; and the rains have descended, and the floods have come and

beat upon the soil, carrying it into the branches and streams and on to the sea where it is lost forever. There are only a few inches of top soil on which we must depend not only now but so long as we remain a nation. Man's destiny is linked to the soil. From it he came and to it he must return. From it he must draw his sustenance.

We stand aghast before the spectacle of destruction in so much of the war-weary world today—the devastated fields and gutted homes, the ruins of great cities now rubble and ashes and bones. But all this wreckage, even in the scorched earth areas, can be rebuilt with time and work. North Africa is already able to produce most of its food demands. Well directed efforts can restore production in the stricken areas. I do not minimize the destruction; but restoration can be rapid.

I am here concerned with an even greater destruction, of our own fields—not by the Nazi or the Jap, but a destruction of which we ourselves have been guilty, with our eyes open, our own hands stained with the dust and mud of our eroded soil.

According to H. H. Bennett, chief of the Soil Conservation Service, we have ruined more land in less time than any other nation in history.

More than 50 million acres of land in the United States, once cultivated, no longer produce crops. That is nearly as much as our entire wheat acreage last year. And the best topsoil has been washed away from an additional crop acreage twice as large as that. Fortunately, we are learning of this danger before it is too late.

Today our Mississippi Valley, and I mean by that the whole great area between the Alleghanies and the Rockies, is the greatest potential food producing area in the world.

## *WATER and the LAND*

Editor's Note.—The War Food Administrator made these remarks on a program of the National Broadcasting Company, March 10, 1944.



**MARVIN JONES.**  
War Food Administrator.

Properly used and preserved it can, for centuries to come, not only supply abundance for our own people, but can help supply others with its products and bring back in trade additional goods for us to use and enjoy.

This great valley is full of abundance and plenty. We have the opportunity to use these resources fully and yet preserve them—or to use them fully and waste them. There is always a conservation use and wasteful use. In the past we have exploited our good earth with a prodigal disregard of its real value to our enduring life as a nation. We have sent the export crops down to the sea in ships and the soil down to the sea in mud. When the Mississippi overflowed at its mouth, we built levees. We tried to reverse nature, and when nature rebelled, as she always does, against such treatment, we built higher levees. We wasted both soil and water. Instead of using the water to our advantage, we tried to get it into the sea as fast as we could.

We have not learned that the wise way is to go back up where the water falls as rain and work with nature instead of against her; to utilize water at the source and thus treat it as a blessing instead of a curse. Whatever system will retain that water and soil is worth any national effort, however great. Out in the dry country not a gallon of water should be permitted to reach the sea. All should be used on the land. In other areas where it is abundant, it can be channeled and utilized for power, for additional wealth.

After the war our available manpower will eagerly turn from destruction in war to construction in peace; our engineering and technical genius and skills will turn from their prodigious feats throughout the jungles and deserts of the world in making war, to the constructive challenge that awaits them here.

It is not for me here to spell out the technical blueprint of how this may be done. We have, fortunately, in this country those who have proven in this war that they are able to carry out any task, however big the job may be. Once made aware of the challenge, the genius of America will meet it without any specific directions from me.

We now know better than any other people have ever known how to conserve our soil resources. Great progress has been made. The Congress, with far-sighted vision, has established a Soil Conservation Service and made provisions for carrying out an extended program of preserving our greatest natural source of wealth. Millions of acres have been scientifically protected and are now producing an average of 20 percent more than they did before.

But I am told that about 90 percent of the conservation job lies ahead.

Just what is there to be done? How many men and how many years will it take to do it? What will it cost? Fortunately these questions have been anticipated and studied by the Soil Conservation Service. A nation-wide survey has already been completed showing how much land needs treatment and where.



Here is some of the work that should be done. We need to build six million miles of terraces across sloping land on 95 million acres, to control water and protect the soil.

We need to drain about 30 million acres of some of our richest land, which is too wet for full production.

We need to build thousands of stock ponds for better livestock production, particularly in the West.

We need to improve our farm irrigation and water use on 12 million acres in our drier regions.

We need to plant soil-building and erosion resistant crops on thousands of mutilated fields.

There is other soil conservation work to be done by the farmers themselves and their neighbors. For example, 120 million acres of our farm land needs to be plowed on the contour. There is a need for strip cropping on 90 million acres and improvements of about 110 million acres of pasture. There are 40 million acres of unfavorable land now in cultivation that should be planted to grass, legumes, and trees as quickly as possible.

Fortunately farmers have become so conscious in recent years of the importance of soil conservation to their prosperity and security that they have already developed much of the machinery necessary to carry out this work. Seven years ago farmers organized their first soil conservation district. This enabled the farmers in that district to work together in a common effort to safeguard the land in that district. It worked so well that today there are nearly 1,000 of these soil conservation districts. These include about  $2\frac{1}{2}$  million farms and ranches that cover more than 500 million acres. In other words, the people themselves on the land are already actively on the job, so that what I have suggested is no new scheme.

Let us look forward confidently to our ultimate success in our efforts to prevent the loss of our natural resources. What will that success bring?

Let us use our great Mississippi Valley as an example of what we might expect in our other great watersheds on both coasts. I believe it is not too much to visualize a system of effective control over our soil and water resources.

This would include using the rainfall on the plains and hillsides where it falls, instead of letting it run off in waste.

It would include the many additional soil conservation districts that will then be joined in this common effort.

It would include an automatic form of natural crop insurance against drought; water stored in the soil during wet seasons would be available for crops in dry seasons.

It would include large dams on the rivers and thousands of small dams on tributary streams and in pastures and fields to give us flood control.

It would include electric power generated at the dams and flowing out over the productive countryside to the millions of farm homes that need it.

It would include protecting these dams against destructive silt, to insure our hydro-electric power—increasingly important in the years ahead as we view our diminishing supplies of coal and oil reserves.

It would also include a decentralized industrial development so that the raw materials would be close to the heart of the business community.

It would include a suitable network of highways and railroads and airlines as a natural part in this development.

It would include millions of farm homes made more secure against the future.

It would mean our ability to survive, for regardless of what we do, what plans we make, or what genius we may possess, our Nation must perish unless we take care of the soil.

The soil of our country is our heritage. If wisely used, its value, its strength, and its productivity are ageless. In peace or in war no nation can afford to waste its substance. The children of the future have a stake in this—our greatest source of national security.

# Soil Conservation spreads



By R. W. ROGERS

The term "conservation" has been in use for many generations, but never in the history of man has conservation of natural resources, particularly that of productive soil, had a fuller or more important meaning than today. Consider the enormous drain on our national resources brought about by this present world conflict. Our supplies of vital materials such as oil, gasoline, iron, coal, timber and agricultural products—the most important of which is food—are being used in ever-increasing quantities. In times of war, as well as of peace, the first consideration of people the world over is food.

We as a nation can remain strong and progressive just so long as we can maintain or increase the productive capacity of our land, which is directly dependent on soil conservation and sound land use. Our production of food and various raw materials may have to be increased even further during the continuation of the war and for years following the war. The way to prepare our physical production plant—our productive land—for meeting the demand without serious damage to the land is through the spread of soil conservation practices.

Soil conservation practices are spreading throughout the United States. Farmers, and city people, too, are becoming increasingly interested in soil conservation because they are beginning to understand the significance of the fact that food, fiber, and timber all come from the soil. Only through conservation can our soil be safe-guarded and maintained for continued use. Most conservation practices are relatively simple—contour farming, crop rotation, controlled

Editor's Note.—The author is chief, record and reports division, Soil Conservation Service, Washington, D. C.

## Across the Land

grazing, protected woodlands and so on. Others are a little more complex and difficult of application, such as terracing, drainage, and irrigation. But all have a place in our national conservation program, certain particular practices being primarily applicable to the various types of land use—cropland, meadow, orchard and vineyard, pasture, range, woodland, wildlife, garden, for example. The use of soil and water saving practices singly, and in combinations, according to land capability, is called conservation farming.

In the early days of American agriculture, settlers found plenty of good land available at little cost, and acquired the habit of looking upon land as limitless and inexhaustible. The custom was to clear a plot, use it for a few years, until the top soil was washed away, and then clear another field or move to another tract. This destructive and wasteful tendency continued until only a few years ago, when fresh land suitable for clearing began to get scarce. In the processes of exploitation, and migration from the worn out land to better land, there were left behind abandoned sites and millions of gullies. In the absence of soil conservation, the bare soil was exposed to the devastating effects of erosion. More than 50 million acres of cropland have been ruined for further practical cultivation; another 50 mil-

### FRONT COVER.

Texas quarter horses and colts grazing in a white clover, irrigated pasture, Santa Barbara County, Calif. Carrying capacity of pasture, 3 acres per animal unit. This picture, taken by R. B. Branstead, was among the illustrations which accompanied Mr. Rogers' manuscript.

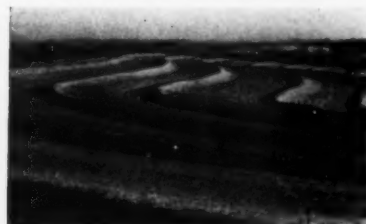
**VEGETATIVE AND MECHANICAL PRACTICES POPULAR—AND SUCCESSFUL—IN CHECKING EROSION.**



**Strip cropping.**



**Contour planting.**



**Terracing.**



**Pond construction.**



**Farm drainage.**



**Irrigation.**

lion acres have been nearly as badly damaged and 100 million acres more have lost fully half of the topsoil. Of the 1,060,852,000 acres comprised in 6,096,800 farms and ranches of the United States, according to the 1940 Census, about 398 million acres are in cultivation. If developed and improved with soil conservation practices, the total potential possibi-

ties for crop production are 400 million acres. The topsoil remaining is now on the average, less than seven inches deep.

Crop yields and production vary directly with the depth texture and structure of topsoil and with the amount of plant foods contained in it. Costs of production are higher and net farm income is much less



Wealth washed away: Result of uncontrolled soil erosion.

when the top soil is removed. Based on experimental evidence, it is estimated that the soil losses in the United States are now approximately 5,400,000,000 tons annually. With the weight of 7 inches of topsoil approximately 1,000 tons per acre, this soil movement represents the yearly loss of topsoil from 5,400,000 acres of fields and pastures. That this soil is on its way downstream is obvious to everyone during flood stages. It moves with every rain, and it

moves as the wind passes across unprotected plains or other exposed dry sandy land. Topsoil is not replaceable, and subsoil can be made productive only after laborious processes and a long period of time.

As you pass by highway, railroad, or air, casual observation shows many places from which the topsoil is gone. Look in the lowlands, along fishing streams and navigable rivers, which once ran clear, and you will see debris and rubbish left by receding waters. Go down along the lower Mississippi River, or other rivers and streams, and see where some of the sand muck, and silt have stopped, to be pumped dredged and hauled, at great expense, to the levees harnessing the channels. You will also find streams that have filled, and drainage that is inadequate, and other areas that are covered by swamps or are too wet for agricultural use. Where rainfall is insufficient, many areas are too dry for crop production and water must be applied by irrigation methods. They are not pleasing sights. The human elements and the physical factors of soil and water losses must continue to be analyzed, treatment recommended, and vigorous action taken to insure the continued growth, prosperity and beauty of our country.

The application of soil conservation practices on the land increases yields on an average of at least 20 percent for the United States as a whole. After treatment, 100 farms will produce as much as 120 farms without treatment. A report by 9,244 farmers in 47 states shows that on their 3,900,000 acres the annual average per acre production of major crops has increased 33.5 percent as the result of soil conservation. Regional variations in percentage increase were as follows: Northeast, 33.0; Southeast, 40.4; Upper Mississippi, 25.6; Western Gulf, 35.0; Northern Great Plains, 35.1; Southwestern, 27.7; and the Pacific Coast, 21.3.

On these farms it was found that 1,380,000 more bushels of corn were grown on 32,000 fewer acres; 14,705 more bales of cotton on 2,892 less acres; 778,882 more bushels of wheat on 25,303 less acres of land. Increases in other crops and farm products, as a result of conservation farming, were equally as high. Livestock, numbers showed substantial increases, dairy cows 27 percent, beef cattle 22 percent and hogs 53 percent.

These results explain why farmers in many areas are requesting the Soil Conservation Service for more assistance than is available for the selection of land uses and establishment of practices.

In all programs dealing with soil and water conservation for which the Soil Conservation Service has been responsible, 309,746 complete conservation plans covering 99,164,540 acres have been prepared. Approximately 66 million acres had been completely



## WOODLAND AND WILDLIFE



Tree planting.



Border strip.



Improvement cuttings.

treated with soil conserving practices on January 1, 1944. Approximately 17,889,000 acres planned and 7,385,000 acres treated were on public lands, and the remainder on private farms and ranches.

The State legislatures of 45 states have authorized farmers and ranchers to organize and operate soil conservation districts. Land owners are selected by the local people to administer the affairs of each district. These men comprise the governing body, and

their job is to develop locally adaptable soil and water conservation programs, solicit all available cooperation and assistance, and effectuate plans for establishing soil conservation practices on farms and ranches.

The first district was organized in North Carolina, August 1937. Since that time this democratic procedure for cooperative action in soil and water conservation work has spread to all states in the

Union except three. As of January 1, 1944, 985 districts, containing approximately 559,282,000 acres had been organized. District supervisors are taking advantage of many kinds of cooperation and assistance from local civic and agricultural groups, colleges, county, State, and Federal agencies. The Soil Conservation Service is cooperating with districts by furnishing soil conservationists who have been technically trained in farm management, soils, engineering, forestry, agronomy, range management, and assists in the selection of proper land uses and the establishment of appropriate soil conservation practices. Limited quantities of machinery, equipment, materials and supplies have been furnished.

Farmers and ranchers are requesting assistance from districts in ever-increasing numbers. As of January 1, 1944, there were on file 327,301 requests. Farm conservation plans had been prepared on 201,111 farms and ranches containing 54,251,763 acres, and there were 25,204,205 acres within districts on which soil and water conservation practices had been applied. These plans represent a mutual cooperative agreement between the farm owner or operator and the district, in which it is agreed that each field will be used according to its capabilities in consideration of the farm needs, and that soil and water conservation practices necessary to control erosion and maintain or increase the productivity of the land will be established each year. In some areas farmers have organized into community or neighborhood groups, so that their combined efforts, thinking and improved techniques can be applied to conservation problems. During the calendar year 1943, requests to districts from farmers and ranchers showed a decided increase over previous years; 81,423 applications for assistance were received; 54,174 farm conservation plans, containing 17,629,318 acres, were prepared, and 9,865,697 acres were treated.

In an effort to speed the spread of soil conservation practices for immediate increased agricultural production, the Soil Conservation Service, in cooperation with soil conservation districts, State agencies, and other Federal agencies, has participated in a program known as the "widespread application of conservation practices." As a result of this program, one or more various soil conservation practices were applied on approximately 407,000 farms during 1943. At least 7,275,000 acres on these farms, 10 percent of the acreage, or an average of 18 acres per farm, were treated. Soil Conservation Service technicians participated in approximately 10,000 training meetings with district supervisors, farm and ranch operators and local agricultural leaders, at which over 200,000 leaders received instructions in the selection of land

for specific crops and in the selection and methods of application of conservation practices on the land—practices which could be carried out with a minimum of available farm labor, equipment and other production supplies.

The local leaders who received this training held 16,924 meetings in farm communities, which were attended by 349,295 farmers and others interested in conservation. At each of these meetings and through individual farm contracts, instructions were given as to the benefits and methods of application of soil conservation practices in each community. Approximately 18,600 demonstrations were held on farms by technicians and locally trained leaders, with groups of farmers actually demonstrating the establishment of practices. Over 70,000 farmers participated in or received definite on-the-job instructions at these demonstrations. A large majority of the widespread application work was carried out on farms which did not have farm conservation plans. Essential war crops were given major emphasis and practices which the farmers could establish with a minimum of effort were stressed. After seeing the practices established on their own farms, with resulting increases in yields and production, many of these farmers and operators have applied to district supervisors for farm conservation plans and additional technical assistance looking toward the establishment of the more complex practices.

Soil conservation practices are spreading into farm woodlands. Since May 1937, 46 farm forestry projects containing 30,744,734 acres in 34 states have been established. As timber supplies and woodland products, so vital to our war effort and civilian requirements, dwindle, each tree on American farms has more significance. These trees, comprising a forest of about 137,000,000 acres should be protected by soil conserving practices from malicious burning, overgrazing, and improper cutting. Farmers are beginning to appreciate the benefits of good woodland management. They are building fences to protect the woods from livestock; making selective cuttings of mature trees for the construction and maintenance of farm buildings and for sale; removing dead and diseased trees from growing stands, for fuel, pulp, and chemicals. Community organizations are being formed for the control and suppression of fires. Woodland improvement and soil conserving practices have been applied on many other wooded areas not having detailed woodland plans, as a part of the farm conservation plans.

As has been pointed out, there are many areas in the United States that are no longer suitable for profitable agricultural production, due to unsound

land uses and a lack of soil conservation practices. It has been found desirable and economically feasible to the impoverished people living on such areas and to the welfare of the nation, for the government to purchase 212 such areas, comprising 147 land utilization projects, which contain over 10,000,000 acres. Of the total, the Soil Conservation Service manages 3,228,000 acres directly; 3,900,000 acres are managed through local agencies; 1,101,000 acres are handled under state management with Federal agencies as custodian, and the remainder, approximately 1,765,000 acres are directed by other Federal agencies.

Some of these project areas are being used by our armed forces for training purposes. Many have been converted into recreational parks, with club houses, cabins, fishing and boating lakes, trails through the woods and along the streams. Many of the former scars of erosion and improper land use have been covered up with growing vegetation. Permits are issued to farm operators who live near these projects for grazing, haying, cropping and the removal of forest products from certain fields that remain suitable for such purposes. In time, with the use of soil conservation practices, much of the land contained in these projects will again be making a major contribution to our national economy.

City folks understand better now, during these days of rationing and work in 20 million victory gardens, that the food they eat comes from the soil. Farmers and city people need each other's help, and mutual cooperation between them is fundamentally helpful. Large industries have become particularly interested in the conservation job, as demonstrated by publications and by the infiltration of soil and water conservation into advertising. Newspapers, periodicals, and magazines give more space to the subject of conservation. Equipment manufacturers are developing new and more satisfactory tools for conservation farming. State and county officials, bankers, lawyers, doctors, merchants, and businessmen are offering interest and support. Colleges, schools, churches, garden clubs, sportsmen clubs, and many other groups and organizations are beginning to rally to the cause of conservation. Even more significant is the action that farmers have taken in applying soil conservation practices on their farms and in helping their neighbors establish needed practices on the land. More farmers are beginning to realize that conservation farming is good farming—good business.

Soil conservation practices are spreading on the land as you can see from the few facts presented here, but the conservation job which must be done has only begun. In the future, the solution of our national land problems will be achieved largely through



Effective vegetative control: Crop residue.

conservation farming. Each community, each farm, must plan—chart its own course of action—on the

(Continued on page 255)



## TRAINING SCHOOL TO SUPPLEMENT APPRENTICESHIP

By H. C. DIENER

One of the major problems presented by the war is how to keep the home front actively supporting the armed front. Manpower is scarce and growing scarcer, and in the field of food production as in many others, it is necessary to resort to every possible device to make the best use of the resources available.

The Soil Conservation Service long ago converted to a war basis. Now to meet a shrinking supply of personnel it has cut red tape, eliminated waste motion, and reduced urgent necessities and procedure of getting food-producing, conservation practices applied to land.

The manpower situation, always acute in the expanding district program, is made doubly so by the demands of the armed services. Our field staff of healthy, well trained, young men is being used by those forces for map reading, engineering and technical work. We have lost to the military service more than 2,700 persons, approximately one-third of our total employees. Replacement is difficult, and a term of apprenticeship is hardly practicable in view of the pressure for service in the field.

New recruits are added to the Service at an approximate rate of 100 per month. It is obvious that these new recruits are unlikely to have the basic training necessary to fill adequately the positions that are waiting. Personnel trained in basic subject matter such as agronomy, agricultural engineering, forestry, biology, farm management, and allied agricultural fields are not being poured out of our colleges. The armed forces are greatly depleting the student bodies. The pool from which the Soil Conservation Service formerly drew employees is not almost a dry well.

In the past a period of 6 to 12 months elapsed before full competence and production was reached by new soil conservationists. If we can reduce this period to but a few weeks we will have made tremendous strides in solving some of our problems.

Training schools have been mentioned as an important means of achieving the shortening of apprentice time. Training schools? Immediately the fundamental conservative offers a dozen objections. Where are the necessary funds? Who will make up the teaching staff? Is this system the most eco-

Editor's Note.—The author is head, training section, Soil Conservation Service, Washington, D. C.

## Lessons Learned



La Crosse training school enrollees visit the Soil Conservation Service, Winona, Minn.

**Standing**—from left to right: Olin A. Clay, Good Hope, D. C.; Albert A. Klingebiel, La Crosse, Wis.; Frederick J. Reed, Pomeroy, Ohio; Lawrence W. Schindler, Coshocton, Ohio; Elmer R. McCracken, Bridge, Ill.; Arthur J. Kelley, West Salem, Wis.  
**Kneeling**—from left to right: Dolph Craig, Albuquerque, N. M.; Dr. Harry C. Diener, Washington, D. C.; George Dickinson, Spartanburg, S. C.; Al L. McClellan, Upper Darby, Pa.; George A. Mowbray, H. training officer, Milwaukee, Wis.; Walter R. Kelly, Bosch, Goshen, Ind.; Matt R. Stimac, Milwaukee, Wis.

nomical manner of producing productive personnel? We recognize that there are costs in conducting a school; however, if a laboratory school can be developed where a short period of instruction and student time will result in a shortening of apprenticeship and in a large, quick increase of productive time, there is economy in the use of that school. Why not? The army could not think of sending men into the field for combat duty without thorough training. In mechanized warfare special schools have been found both economical and efficient.

The Upper Mississippi region of the Soil Conservation Service has taken steps to use a training school as a remedy to the situation. It has established such a school at La Crosse, Wis., to give each new sub-professional and professional employee, employees promoted from CU and CAF to subprofessional or professional grades, and employees who are low in productive efforts, a good basic knowledge of soil conservation work.

A practice laboratory system is being used, under which a student has class work and then field work to try out by actual experience what he has received



# ...rned on the Land



...olleges visit the Soil Conservation Service nursery at Winona, Minn.

...A. Clay, Glad Haven, Mich.; Chris O. Henderson, Wash-  
...el, La Crosse, Wis.; Robert A. Hendricksen, Alma, Wis.;  
...io; Lawrence W. Daniels, Woodsfield, Ohio; Arnold H.  
...er R. McCormack, Albion, Ind.; Edwin H. Lewis, Cam-  
...West Salem, Wis.; Maurice E. Heath, Ames, Iowa.  
...olph Craig Albuquerque, N. Mex.; Henry A. Johnson,  
...ener, Washington, D. C.; Charles J. Krumm, La Crosse,  
...burg, S. O. Al Limburg, Lincoln, Nebr.; the late Allan  
...orge A. Morley, Houston, Minn.; E. J. Peterson, regional  
...Walter K. Dally, Milwaukee, Wis.; William H. Vander-  
...Stimac, Milwaukee, Wis.; Peter A. Cailotto, Olney, Ill.

in the classroom. Field problems are conducted on some farms in the neighborhood, and as they are worked out by the class and the farmer the result becomes the farm conservation plan for that particular farm. There are 15 class-room days, and 13 days in the field. The time is so utilized that the trainee acquires a good basic knowledge of the organization, purpose, and objectives of the service. Erosion studies, soil, moisture, plant relationship, land use, and land adaptabilities are given careful attention. Engineering, farm planning, farm management, field arrangement, crop rotation, crops, woodland and wildlife management are approached from the practical angle of the farm as a business proposition. The Soil Conservation Service nurseries are studied from research trial and capacity production angles.

La Crosse offers many special advantages to the success of a venture such as this school. The Soil Conservation Service experiment station, operated in conjunction with the University of Wisconsin, offers a unique opportunity to see the results of experimen-

*(Continued on page 255)*

## LA CROSSE SCHOOL AFFORDS SOUND TRAINING

By R. H. MUSSER

"Just call me 'Sonny'. \* \* \* I've just been released from the Navy because of injuries, after a year and a half patrol duty off the Atlantic coast. I'm a graduate of Virginia Polytechnic Institute with a major in agronomy. \* \* \* This job with the Soil Conservation Service is my first civilian job since graduating from college."

"You can just call me 'Chuck'. \* \* \* For the past 2 years I've been teaching agriculture in a high school in South Dakota. \* \* \*"

The first speaker was Ambrose Hinson, new soil surveyor at Vincennes, Ind., and the second was Charles Livingstone, junior conservationist at Mauston, Wis.

They were among the 12 trainees who had reported last summer for first Soil Conservation Service training school at La Crosse, Wis. E. J. Peterson, regional training officer, Milwaukee, had asked each man to introduce himself and tell something about his training and experience.

The other 10 introduced themselves as having had experience as county agents, Smith-Hughes agricultural teachers, or as recent graduates of college engineering or forestry.

"For the next month you men are going to be extremely busy men," advised Mr. Peterson, following the introductions. "We are here for just one purpose. That is to enable you men who have had a wide variety of background, experience and education a chance to get the basic information you need to become good soil conservationists—or better soil conservationists. In this short period that we will be together, you'll have a chance to get a good basic understanding of the relationship of soil, water, wind and plant life to each other and to the problems of land use, soil and moisture conservation so that you will have a firm foundation on which to build your career."

"Let's review briefly the course of instruction you are going to take. Ten days will be spent on soils, plant relationships, and land capabilities. In that time we'll discuss in the classroom soil formation, structure, chemical composition, soil drainage, soil classification, and other theory concerning soil. We will then spend about 6 days in the field studying

Editor's Note.—The author is regional conservator of the Upper Mississippi Region, Soil Conservation Service, Milwaukee, Wis.

soils. That will include your making a soil conservation survey of a farm. By the time you have finished your course in soils I'm sure A. A. Klingebiel, field party chief, your instructor, will have given you a good foundation in the subject which will help you in all your future work.

"Your work in engineering will be taught by M. M. Culp, design and construction engineer, who will discuss water disposal systems. J. C. Triefoff, or "Jim" as you'll soon know him, the engineer on the experiment station here at La Crosse, will spend 4 days with you, some on the study of hydrology but most of it in the field on the care and use of survey instruments and actual practice in making field surveys.

"Erosion experiment data will be discussed during the 16 hours you spend with Orville Hays, director of the La Crosse soil conservation experiment station. During that period he will take you to the station to observe and study the experiments at first hand.

"You'll study the effect of conservation planning on the farm business under H. O. Anderson, director of economic research for the Soil Conservation Service, La Crosse, and his assistant Don Mitchell. That will take about 20 hours.

"You'll find out how forestry, wildlife, and nursery work fit into the soil conservation program from Charles Krumm of the La Crosse experiment station, and Maurice Heath, Thor Bergh, and Henry Johnson of the nursery division. One day will be spent at the Winona nursery to familiarize you with the field work of the division.

"To round out your technical training you'll spend 6 days with Art Kelley, farm planner of the La Crosse County Soil Conservation District, West Salem, who will explain farm planning, field arrangement, crop rotations, and who will assist you before you are through in actually planning 2 farms in this district. Incidentally, there are 405 farmer-district plans in La Crosse County, not to mention the fact that there are over 400 farmers in the old Coon Valley project located only 20 miles from here, where farmers have been practicing conservation for the last 10 years. You will have ample opportunity to see how soil conservation plans really work on the land.

"For the next 3 days I'll spend 9 hours with you discussing the organization of the Department and the Service, our relationship with other agencies, the Service's relationship to soil conservation districts, and personnel matters which are of vital interest to you and to your family."

During three school periods or courses, each lasting 1 month, the Upper Mississippi region graduated 34 men from this new training school at La Crosse.

Previous to starting the school last summer we had experienced some excellent results through using the training school idea to develop conservation surveyors. Under the direction of the conservation surveys division more than 150 conservation surveyors had been trained under the personal supervision of A. A. Klingebiel, field party chief. The surveys division found that they could put a man on production mapping after 6 to 10 weeks of concentrated training at the school and get a much higher production and quality of work than they had formerly experienced in assigning soil surveyors to experienced field men for individual training.

Using that experience, it was felt that the same results might be obtained by giving all technical employees a basis training course instead of assigning them to field stations for training as had been done in the past. The school is open to both professional and subprofessional men.

School started again on March 20, and will continue throughout the summer months. The results of last summer's schools have proved beyond a doubt that the Service will greatly benefit by assigning every new technical employee who comes into this region to the training school at La Crosse. The school has proved a life-saver in training "green" inadequately trained or inexperienced employees such as the Service frequently has to take because of the wartime manpower shortage. It has proved equally effective in improving the value of employees who have been with the Service for several months or years.

Experience gained in the La Crosse training school will enable us to develop a similar school where employees returning from the armed forces can reorient themselves and become acquainted with the new information and methods developed while they have been serving their country elsewhere. This will be especially helpful in enabling Service employees to resume their careers with a minimum of loss because of being out of touch with their technical fields.

The job of training is not done, however, when an employee completes the course at La Crosse. Both old and new employees need further training under their supervisors in educational methods, public speaking, fundamental technical information, and the new information and methods acquired through research and field trials. Additional technical training is especially important for those who fill specialist positions in the various technical fields.

The value of the new training school is shown by the fact that the course has been appraised as being equivalent to 10 credits of university work. The Service personnel division takes this into full account. To many of our employees who lack the basic qualifi-

cations for a P-1 rating, completion of this course has been a means of attaining a professional rating. Thus, training has been tied in with our promotional policy.

Comments of the men completing the course also indicate its value more clearly than anything else. I talked to a number of these men the last few months and I recall that Mr. Hinson told me he considered the course extremely important not only for the basic information it gives but also because it stimulates thinking. He pointed out that the P-2 men who usually have to train the newer employees are under so much pressure to produce farm plans and other work that they do not have the time—some don't have the patience—to teach their subordinates many of the primary and fundamental things they need to know. They teach them just enough to do the immediate job. The new employee under such a situation can easily form bad habits and form erroneous conclusions.

*(Continued from page 253)*

tal research applied on a practical, paying dairy farm. The Service staff at this station is a valuable part of the school's teaching staff. A complete county soil conservation district in La Crosse County has farm planners who can be used for instructors with very little time lost from their regular jobs.

The oldest Soil Conservation Service demonstration project in United States, Coon Creek, furnishes examples of conservation measures which have been in effect for more than 10 years, and the soil conservation training school for soil surveyors has been located in La Crosse. The Soil Conservation nursery at Winona, Minn., and the economic research work at La Crosse, tend to make this an ideal location for a training school because of the exceptional physical facilities and the excellent faculty at hand.

The training school is under the jurisdiction of the regional office at Milwaukee. It is closely supervised by E. J. Peterson, regional training officer, who also gives time to instruction in orientation. H. H. Klingbeil, who has been conducting a school for soil surveyors, is the local supervisor of the trainee group and administrator of the school.

The faculty changes from time to time. The major portion of the instruction is given by technical and administrative men located at or near the school. This makes it possible for these men to carry on their regular duties with little time lost. Each teacher spends not more than one to nine days with the classes. After the initial schools have covered the field rather thoroughly it may be necessary to hold later schools only as needed—perhaps quarterly to

Nicholas Calebresa, conservation aid in the Adams County Soil Conservation District, Friendship, Wis., after 2 months experience with the Service told me:

"I learned a good many of the fundamental facts which help me understand why we do many of the things we do. The school helped me understand the relationship of theory to practical application. This knowledge all helps a fellow do his job better, gives him confidence to go ahead and plan a farm."

Perry Carroll, Baraboo, Wis., junior soil conservationist in the Sauk County Soil Conservation District, who has had several years experience as a senior foreman and in other positions in a CCC camp said that when he first started work in a district he found himself "floundering" and that after 10 months he didn't have all the fundamentals which he obtained in a short time in the training school. As he said, "This training school helps put you at peace with yourself and your job."

orient new employees or to reemphasize basic considerations to older personnel with low production records.

When the employees leave this training school they are not considered finished soil conservationists, but they do have a solid foundation. They know Service objectives and purposes, and the interrelationships of techniques, sufficiently well to adapt themselves quickly to building conservation into practical, everyday farming.

The Upper Mississippi region also is gaining the experience needed to reorient the returning conservationists from the army and to handle many post-war situations. Like conservation farming itself, the training schools pay now and provide for the future. too.

*(Continued from page 251)*

basis of land needs and economic circumstances and then execute the plan. This will require cooperative efforts of everybody and the technical assistance of experienced soil conservationists.

Urban interests and farmers share equally the responsibility for the spread of soil conservation. The necessities and conveniences associated with a good standard of living—which make each community a better place in which to live—can be provided through conservation farming.

All other business depends on the business of farming. Therefore, it is imperative that the farmer—as the guardian of our basic resource, our productive land—be assisted at all times. Without productive land, we cannot have a permanent agriculture, and without a permanent agriculture this nation cannot survive.





There are two indices of the desirability of fairly heavy trapping in this marsh. Numerous houses and the intensively grazed vegetation point to a large population of muskrats.

## FUR FROM FARM LANDS

By PHILIP F. ALLAN

### Part I

The wild fur-bearing animals have always played a role in the economy and development of the Nation. No less today than in the coonskin-cap era do fur bearers help clothe our people. The earliest explorers of the West were trappers, many of whom, like Kit Carson, became the guides to those who started the pioneer agriculture in the Louisiana Territory, the Great Basin, and the West coast.

For many years so intent was the Nation on producing cultivated crops and domestic animals that wild crops suffered from lack of attention; and, what was worse, from misuse of the land. Today we know how to produce vast yields of crops on lands best adapted to cropping. The conservation of soil and moisture and the adaptation of crops to the types of land most suitable for their production tend to restore to wild animals a place to live. The fur bearers, fish, and game are finding a place in diversified agri-

culture and in no small way are contributing to farm income.

Today the part that fur bearers are playing in American history lies in their yields of fur, fat, and food. No nation engaged in modern warfare can afford to overlook any source of weapons, whether military or economic.

### WARTIME VALUES OF FUR BEARERS

Wartime conditions have made it important to utilize all sources of food and other useful products of the land. Fur-bearing animals that can be produced on farm lands provide furs useful to the armed forces and civilians alike. Members of the United Nations' merchant marines, war workers constructing the Alaska highway, and civilians on war jobs in Alaska, Greenland, and Iceland, use fur garments. The Army uses wolf and raccoon skins to a limited extent for linings of high-altitude and arctic garments and is testing a number of other furs for more extensive use.

Editor's Note.—The author is senior biologist, Biology Division, Soil Conservation Service, Washington, D. C. The second part of this article will appear in the June issue.



Trappers and hunters are being urged by State conservation departments to save fat from animals. Enough glycerine can be obtained from 100 pounds of ordinary animal fat to make 25 pounds of nitroglycerine. Some fur bearers also supply considerable quantities of palatable food. Muskrats and raccoons are sold for food and many opossums are eaten. It is estimated that half of the muskrats taken annually could be utilized for food, thereby providing 2,000,000 pounds of savory meat. If only a third of the opossums were in an edible condition when taken, they would provide 3,000,000 pounds of meat, and half of the 600,000 raccoons would provide 1,500,000 pounds of food.

Furs are an important wild product of agricultural land and provide a wartime crop from types of land often otherwise unproductive. Many parts of the farm contribute to their production, particularly areas not useful for cultivated crops, forage, or wood products. Protection of suitable fur-bearer habitats, along with other rather simple management measures, contributes to yields of the fur crop without the expenditure of a great deal of time and effort on the part of the farmer or rancher. On parcels of wildlife land, the production of fur bearers takes an important place along with the management of those lands for edible wild fruits, honey plants, and the development of ponds for a handy supply of food fish.

Stream and drainage-ditch banks, marshes, swamps, overflow lands, lakes and ponds, hedgerows, rock outcrops, old strip mines, abandoned quarries, cliffs, and box canyons dot the farms and ranches of the Nation. Although they often are considered "idle" or "waste," they are in fact wildlife lands.

By virtue of numbers taken annually, the most important of the fur bearers are (1) muskrat, (2) opossum, (3) skunk, (4) raccoon, (5) mink, (6) weasel, (7) fox. The first five are most susceptible to increase through land management. Their abundance (table 1) and widespread distribution also permit broad, general recommendations. Some other farm fur bearers which may be increased by land management practices are discussed briefly.

*Annual fur harvests in the United States*

Region	Muskrat	Opossum	Skunk <sup>1</sup>	Raccoon	Mink	Total
	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
Northeast.....	3,027	248	569	79	32	3,955
Southeast.....	340	594	235	149	36	1,394
Upper Mississippi Valley.....	3,123	710	733	141	201	4,908
Southern Great Plains.....	2,262	1,685	478	201	126	4,752
Northern Great Plains.....	437	172	362	22	24	1,217
Southwest.....	<sup>(1)</sup>	<sup>(1)</sup>	<sup>(1)</sup>	<sup>(1)</sup>	<sup>(1)</sup>	<sup>(1)</sup>
Pacific Coast.....	132	1	34	11	14	192
Total.....	9,321	3,410	2,631	603	483	16,418

<sup>1</sup> All species.  
<sup>2</sup> No estimate.



An opossum.



### FARMS AND FUR BEARERS

Farm lands in the United States produce more furs than forests and wilderness, acre for acre, and the wildlife lands on inland farms sometimes outyield even the coastal marshes.

The fur animals, although they may range the woods for beechnuts, dig pasture grubs, or eat waste corn, generally make their homes in little-used parts of the farm. As the ordinary practices of farming encroach upon wildlife lands, the numbers of fur bearers diminish. The grazed stream bank, for example, supports few muskrats, minks, and raccoons, but well-protected stream banks are favored by these animals (fig. 1). The stream margin, in fact, is one of the most productive fur-bearer habitats on farm land. It is sometimes rivaled by ponds, well-vegetated drainage ditches, and woodlands.

Often simple developments, designed to control erosion or to put other land to better use, make wildlife land habitable to fur bearers. Annual yields comparable in value to those of arable lands are not unusual on the wildlife land of the country. Consider a farm pond that produces \$10 worth of fur per acre in addition to other uses at no outlay beyond the time and small expense of trapping. One published record shows 75 cents per hour return after costs of traps and other expenses were deducted—\$97.50 profit from each \$100 worth of fur taken.

### HOW TO IMPROVE LAND FOR FUR BEARERS

A woodland or an orchard will produce some timber or fruit with no management at all. As the care these areas receive becomes more intensive, the yields

become greater. Wildlife lands with no management now produce most of the Nation's fur crop, but the improved marsh may yield two or more times more pelts than an unmanaged marsh. The following management measures, listed in approximately increasing complexity, indicate how various kinds of land may be managed to increase the number of farm fur bearers. Few farmers are likely, at present, to manage a single species intensively enough to justify the presentation of material on muskrat management or mink management even if biologists knew how. Many, however, are prepared to manage their land, about which much is known, if they can do so economically and realize a profit on their investment.

If only the simplest measures are applied, increased yields of furs will generally result. Whether the land is in marsh, rock outcrops, gullies, or woodlands the easiest practices to apply are the protection of the vegetation from uncontrolled fires and from grazing by livestock. These lands can be protected from fire by refraining from burning them entirely or by burning only when conditions are suitable. Accidental fires should be put out, and firebreaks may be plowed or established by controlled burning or ditching at suitable locations. Grazing is most effectively controlled by fencing, but if areas are to be grazed, livestock numbers should be limited to reduce damage to food supplies and burrows of fur bearers. In the case of streams and ditches the conversion of adjoining lands from pasture to crops will provide protection where those lands are suitable for crop production.



Trappers would look in vain for fur bearers on a raw-banked stream, but with protection of the banks from livestock damage and with the prevention of rapid runoff the stream becomes suitable for muskrats.

### MARSHES

*Practice controlled burning.*—Controlled fires are useful in maintaining desired types of vegetation in some kinds of marshes. This kind of burning also permits greater freedom of travel in the marsh and is thought by some to produce greater growth of vegetation. Marshes should be burned only when accumulations of dead plant litter are sufficient to fill shallow water areas to the point where these areas are not readily usable by muskrats.

At the time of burning, the ground should be saturated with water, and plant crowns, rootstocks, or other reproductive parts of the plants must be sufficiently covered with water not to be killed. Fires are more easily controlled when winds are light or when the weather is damp. There should be an adequate system of firebreaks and sufficient help to keep the fire under control. Muskrat houses should be protected and scattered clumps of vegetation left unburned for animals to use as cover. Controlled burning is not of any particular benefit to fur bearers other than the muskrat.

*Construct ditches.*—Ditching opens the marsh to muskrats, provides somewhat greater uniformity of water distribution, and supplies spoil banks in which muskrats burrow. Ditches can be made in many ways. Blasting is one of the fastest and cheapest ways of ditching and, if properly done, will leave spoil banks. Propagating charges of dynamite permit the construction of long ditches at one time. Draglines likewise are used as a fast and relatively cheap ditching method. This method also provides spoil banks. Sometimes a special turning plow or

ditcher and a marsh tractor are used in large marshes, and the earth removed from the ditch is piled on either side. In small marshes a horse-drawn or tractor-drawn slip scraped may be used, and hand-dug ditches can be built if one has the time. Sometimes special excavators are used on the coastal marshes.

Ditches in the North may need to be 3 to 4 feet deep. Shallower ditches 1½ to 2 feet deep are suitable in the South. They should be at least 2 to 3 feet wide and have a 1 to 2 foot spoil bank (banks on both sides are most desirable). In places likely to be flooded, spoil banks should be high enough to afford refuge for fur bearers. High spoil banks of peat, however, are likely to dry out and be destroyed by fire. Usually ditches should have no grade or should be blocked at intervals to prevent drainage. The most suitable pattern for ditches will vary with the site (fig. 2), but the most desirable distance between small ditches ranges from 50 to 150 feet. Large ditches, up to 16 feet wide and 4 feet or more deep, are sometimes used in the coastal marshes but they are expensive. In the average marsh on farm land the small ditch is most satisfactory.

Muskrats, minks, and raccoons benefit from ditching the marsh.

*Control water levels.*—Water-level control is usually handled by dikes or by levees and gates. The water table is maintained at or near the ground level. The methods of flooding marshland are by damming, diverting water from streams, or pumping water from nearby lakes or rivers. Engineering assistance generally will be needed for the installation of water-control devices. All of them are likely to be expensive, and the cost may not be justified unless

returns from furs can be depended upon.

The muskrat principally benefits from water-level control.

### STREAMS AND DITCHES

*Develop and maintain vegetation on the shores.*—As pointed out previously, the easiest way to develop and preserve the vegetation is by protecting it from livestock and from fire. On the banks of streams and ditches marsh and shoreline plants or shrubs such as rushes, arrowheads, cattails, barnyard grass, and bush willows may be seeded or planted. Where trees cause bank cutting or shade out desired shrubs, grasses, or rushes, they should be cut. However, den trees (8 to 10 per mile) and fruit-producing trees and shrubs such as persimmon, pawpaw, plums, and haws, should be preserved along the streams.

Plantings will benefit muskrats. Den trees and fruit-bearing plants are useful to raccoons, opossums, and skunks.

*Build stream-protecting structures and dams.*—Small dams are used on small meandering streams to create marshes in low spots. Erosion-control structures of loose rock, log cribbing, or piling may provide den sites for minks. Structures on streams generally require careful building and should be constructed with the advice of engineers. Dams built by beavers will improve streams for other fur bearers. The principal fur bearers benefited by dams and other structures are muskrats, minks, and raccoons.

### LAKES AND PONDS

*Establish herbaceous vegetation on the shores.*—As with streams and ditches, the first step in improving lakes and ponds is to develop and maintain suitable vegetation. Here herbaceous marsh and aquatic plants are most desirable. They may be established by protection of the shores from livestock and prevention of burning, by seeding or planting of desired species, and by the removal of unneeded trees and other competing plants. All the farm fur bearers discussed find such vegetation to their advantage.

*Make shallows in strip-mine ponds.*—Shallows in strip-mine ponds are needed for the development of vegetation, and they may be made by concentrating runoff water at suitable locations to form deltas or by bulldozing or scraping earth from the spoil banks. Acidity or a poisonous condition of the water may prevent plants from growing readily. Liming or other treatment may be needed to offset this condition. Muskrats, minks, and raccoons are common along well-vegetated strip-mine ponds.

### ROCK OUTCROPS, GULLIES, BOX CANYONS

*Establish vegetation.*—The simplest protective measures usually are sufficient to develop and main-

tain vegetation, but sometimes it is necessary to build diversion structures to prevent rapid runoff of water through gullies and thus enable plants to get a foothold. Suitable herbaceous or woody food and cover species may be planted although they are seldom needed on rock outcrops such as knolls, cliffs, and escarpments. The fur bearers usually benefited by treatment of these areas are skunks, opossums, and raccoons.

### CROPLANDS AND PASTURES

*Develop hedges and field borders.*—Fur bearers frequent hedges and field borders and if the hedges contain fruit-bearing shrubs the animals will utilize the fruits. Ordinary management such as cutting out large trees, particularly if it maintains the hedge or border in shrubby and perennial herbaceous growth, is all that is needed. These areas should not be burned.

*Develop odd corners.* Small rock outcrops and odd corners which cannot be cultivated are common in cropped fields and in pastures. If these outcrops and corners are borders, the vegetation most suitable for fur bearers ordinarily will come in. Field stones, stumps, and brush may be disposed of there in piles to the benefit of such fur bearers as skunks, opossums, and raccoons.

*Develop permanent vegetation on drainage and irrigation ditches.*—Burning is commonly practiced to control weeds along drainage and irrigation ditches on cropland. This harmful practice is a sure way to maintain weeds because perennial grasses and other useful plants cannot become established. Weeds should be mowed each year before seed matures until permanent vegetation comes in. Grasses, legumes, or other plants may be planted to assure a growth of desirable species. The fur bearers benefited by this practice are muskrats, minks, and skunks.

### WOODLAND

*Practice woodland management.*—Raccoons and skunks, and in some instances, other fur bearers are generally more abundant in ungrazed than in grazed woods. Any of the measures recommended as good woodland management such as selective cutting, timber-stand improvement, and prevention of fire will prove beneficial to fur bearers.

*Develop shrub borders.*—Fur bearers show a marked preference for woodland edges. If the woodland has a shrubby border, the food and cover plants are much utilized by wildlife. Releasing shrubs by cutting out trees where they encroach on fields at the wood's edge for 15 to 30 feet is one of the simplest methods of producing shrub borders. Desirable species of shrubs may be planted. Skunks,



raccoons, and opossums usually will be found along woodland borders.

*Leave den trees and potential den trees.*—Probably the most important single measure for raccoons is protection of their den trees (fig. 3). These are commonly cut by 'coon hunters or by farmers because the tree has little timber value. Since it requires 70 or more years for a den tree to develop and 25 or more years for the cavity to form it is short-sighted to cut it to remove raccoons. Furthermore, it is sometimes equally poor economy to cut a useful den tree for woodland improvement, because the tree may produce a greater value in furs than its wood and space are worth annually. One den tree per 10 to 15 acres

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The principal factor in maintaining raccoons is the preservation of den trees. It takes years for a den to develop in a tree, so it is a good policy to spare them from cutting and to preserve those which show prospects of becoming den trees. (Photo courtesy Mich. Cons. Dept.)

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will maintain a good population of raccoons. About twice as many trees which show signs of becoming den trees should be preserved. That is, 1 per 5 to 7 acres. Thus, there will be ample replacement for dens no longer useful. A thump with an ax will reveal hollow tree trunks and branches, in which a hole may be chopped to open the tree for denning. Raccoons and opossums will benefit from the protection of den trees.

#### DISTRICT FARMERS TAKE HONORS

Fifty-nine counties in 21 States are announced as winners of the "A" banner awarded by the War Food Administration in 1943.

Forty-one of these counties—70 percent—are in organized soil conservation districts.

The "A" banner constitutes national recognition of outstanding agricultural achievement on the part of the farm families of the counties. State War Boards, in selecting counties to be nominated for the distinction, gave consideration to the following items: (1) Production record and extent by which county exceeded year's goals; (2) crop shifts of an unusual and significant nature to vital war enterprises; (3) overcoming problems and handicaps to production; (4) increased efficiency brought about through higher yields per acre after adoption of soil conservation practices, care of livestock, sound farm management; (5) fuller use of land and labor resources, particularly by increasing production, putting idle land into production, and getting full use of potential land and labor resources.



# CHARTS TELL DISTRICT'S PROGRESS

By J. F. COLE and T. W. WEBB

With the Edisto Soil Conservation District in South Carolina, it's system that counts.

Ask the supervisors of the Edisto District how their work is progressing and they can tell you in a hurry. Not with words, but with charts that show exactly how far each district cooperator has progressed in establishing conservation practices under his farm plan.

Each work unit has a chart, keeps it up-to-date. At the top, clear across, are listed the principal conservation jobs—improved rotation, strip rotations, planting kudzu and sericea, terracing, water disposal, pasture improvement, reforestation, woodland improvement. At the left appear the names of the district cooperators. To the right of each name and extending across the chart are a series of spaces for each of the conservation jobs listed at the top of the chart.

To find out, for example, how much pasture improvement work a cooperator, whom we will call Sam Williamson, has done, all that is necessary is go down the list until his name is reached. In Williamson's block headed "pasture improvement" is the figure 47—the acreage called for under his farm plan. Half of the block has been colored with crayon, indicating that half of the pasture work has been completed. Checking further, it is seen that Williamson has half of his terracing done, a fourth of his improved rotations established. In view of the fact that he has had his conservation plan less than 2 years he may be credited with doing a good job of establishing practices.

The chart will also reveal any practices that are lagging. This is indicated by too many white or little-shaded blocks. An abundance of white space, especially for a district work unit that has been in operation for some time, may reflect oversight on the part of the work unit technician or unfavorable local conditions that prevented farmers from going ahead. Either way, the white blocks are "sore spots" to the supervisors of the Edisto District and a warning that something must be done about them.

In one work unit in the Edisto District the white blocks under pasture improvement stood out conspicuously. Now there are fewer white blocks in the pasture improvement column.

One factor that had been hampering pasture improvement in the Edisto District was the lack of ro-

tary lime-spreaders. Much land in the district is acid and liming is necessary to a good pasture. The supervisors bought five rotary lime spreaders and by the end of April 1943, more than 5,500 acres had been limed. Cooperators who use the spreaders pay the district 50 cents a day as rental, and as receipts accumulate the supervisors buy more spreaders or other equipment that can be used in advancing the district's conservation program.

When the charts were first worked up in the Edisto District showing how much practice establishment had been completed, they were taken to the district supervisors. "Now those charts are all right since they show us some of our weak points, but what are we going to do about it?" commented J. D. Prothro, district chairman.

It was decided that each work unit should set up a definite goal for the coming season. But the supervisors did not stop there. Each called together the farm leaders in their home communities and asked them to help. This was followed by another meeting at which the supervisors trained the leaders so that they could give direct help to farmers. In each community an assistant district supervisor was named. All told, the district now has 20 assistant district supervisors. One of them in beginning his work said, "I have often wanted to do something like this for the district, but didn't know just how to go about it. I always felt that some of us could help, as the job is too big for you folks to do by yourselves."

At the end of the season a check was made to see how nearly the goals had been approached. In practically every work unit it was found that more progress had been made than had been anticipated.

It was found that dovetailing the work of establishing practices with the conservation needs as revealed by the charts enables the work unit technicians to make far better use of their time. It also saves travel, as the technician can plan his trips so as to serve more farmers on each swing.

Other South Carolina districts are also finding the charts helpful in systematizing the spread of conservation.

## Any To Spare?

Out of print and hard to obtain is Technical Bulletin 524, titled *Silting of Reservoirs*. Written originally by H. M. Eakin and revised in 1939 by C. B. Brown, this publication is greatly desired by the U. S. Army. Anyone having copies that can be spared is requested to return them to the publications unit, Soil Conservation Service, Washington, D. C.

EDITOR'S NOTE.—The authors are district conservationist, Soil Conservation Service, Aiken, S. C., and assistant State conservationist, Soil Conservation Service, Columbia, S. C.

## NOTE ON FEEDING BLUEGRASS

Some years ago Dr. R. L. Humphrey of Round Hill, Va., took charge of the McLean race horses at Leesburg, Va. They were not winning races although well fed and trained. He took blood samples and Johns Hopkins found that all were deficient in calcium and phosphorus. Dr. Humphreys limed and fertilized the pastures and took blood samples again in 90 days. The man from Johns Hopkins drove to the farm to find out how he had brought up the calcium and phosphorus content of the blood in every case.

The previous year McLean won \$43,000; *that* year \$85,000; the *next* year \$124,000. The doctor's contract was out, and in the next 2 years no more fertilizer was used and winnings dropped back to \$45,000. That was on "good" bluegrass that people said needed no fertilizer! Results with dairy cattle work out about the same way.

—Arnold G. Ingham.

## OVER THE TOP—Again

At a time in our history when everyone, in every job, in every part of the Nation, must take part in the fight for victory over our enemies—and when everything we do must contribute to that fight—I am proud to report that the men and women of the Soil Conservation Service met their responsibilities in the Fourth War Loan. We went over the top; we invested \$830,948 in War Bonds; and we came through with the splendid record of attaining 141.1 percent of our assigned quota.

While I tell you I am proud of this outstanding record of the men and women of this Service, I am sure this must be minor by comparison with the sense of effective participation which each bond investor must feel individually. Our dollars are also fighting this war. If our record in the Fourth War Loan is an achievement, let us still not rest. Even more is going to be needed.

—H. H. Bennett.

## SUPERVISORS SET PACE

Supervisors of the Edisto Soil Conservation District in South Carolina practice what they preach on the 14 farms they themselves are operating under district agreement.

J. E. Cole, district conservationist, reports that a recent analysis shows that 65 percent of the planned practices have been established on the 14 farms. These include 352 acres of kudzu and 212 acres of sericea lespedeza established, 892 acres terraced, crop rotations set up on 1,000 acres, and 117 acres of pasture seeded and improved.



**RANGE AND LIVESTOCK PRODUCTION PRACTICES IN THE SOUTHWEST.** U. S. Department of Agriculture Miscellaneous Publication No. 529. Washington, D. C., November 1943.

Here is a wartime publication, prepared jointly by several agencies solely for the livestock industry of the West. Simply presented, and intended as a handy guide for range-men, the bulletin reflects years of study and experimental work on the part of many scientists. Undoubtedly this particular piece of cooperative work is an omen of happier days ahead for the vast grazing lands of our country.

The new bulletin carries 10 signatures, each that of a noted range or livestock specialist. The specialists represent 8 Federal and State agencies: the Indian Service, the Grazing Service, and the Range Development Service of the Department of the Interior; the Soil Conservation Service, the Forest Service and the Triple-A of the Department of Agriculture; and the animal husbandry divisions of the New Mexico College of Agriculture and the University of Arizona.

The practical handbook consists of brief directions for managing the range and the herds for highest possible production without injury to the soil or to forage plants. It deals with summer ranges, year-long grazing areas, and procedures for determining the degree of use permissible to improve a run-down range or keep a good range in top condition.

Thesis of the bulletin is the close relationship between erosion control on grazing land, forage species and growth, control of herds and grazing, and livestock production as a permanent and profitable industry. About 30 photographs are shown to illustrate range rehabilitation methods and phases, desirable and undesirable plants and grasses, planting methods, erosion control and water conservation methods, and other steps in building back, utilizing, and maintaining those immense tracts of the West upon which the nation is largely dependent for meat, wool, and leather.

—Phoebe O'N. Faria.

## He "Shot" the Cattle

The man who made that spectacular cattle-feeding picture which elicited so much favorable comment when it appeared on the front cover of the February issue has been located. From Hugh G. Porterfield, associate soil conservationist at Amarillo, Tex., comes the following explanation:

"I took this picture on the Liberal, Kans., demonstration project soon after it was started, when the value of windbreaks for livestock protection was being stressed. This was one of the 'old' established windbreaks in the area. Many windbreaks planted by the Service in past years on the High Plains are furnishing cattle this type of protection during the severe winter of 1943-44."



# REFERENCE LIST ☆ ☆

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## OFFICE OF INFORMATION

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<sup>1</sup>From Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.